

## FEATURES

- 3.3V and 5V power supply options
- 230ps typical propagation delay
- High bandwidth to 3GHz
- 75kΩ internal input pulldown resistors
- Q output will default LOW with inputs open
- Available in 8-pin MSOP and SOIC packages



ECL Pro™

## DESCRIPTION

The SY10EP01V is a 4-input OR/NOR gate. The device is functionally equivalent to the EL01 device, E101 (a quad version). The SY10EP01V is ideal for applications requiring the fastest AC performance available.

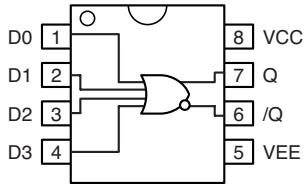
## PIN NAMES

Pin	Function
D <sub>0</sub> -D <sub>3</sub>	ECL Data Inputs
Q, /Q	ECL Data Outputs

## TRUTH TABLE

D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Q	/Q
L	L	L	L	L	H
H	X	X	X	H	L
X	H	X	X	H	L
X	X	H	X	H	L
X	X	X	H	H	L
H	H	H	H	H	L

**PACKAGE/ORDERING INFORMATION**



**Available in 8-Pin SOIC and MSOP Packages**

**Ordering Information<sup>(1)</sup>**

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10EP01VZC	Z8-1	Commercial	HEP01	Sn-Pb
SY10EP01VZCTR <sup>(2)</sup>	Z8-1	Commercial	HEP01	Sn-Pb
SY10EP01VKC	K8-1	Commercial	HP01	Sn-Pb
SY10EP01VKCTR <sup>(2)</sup>	K8-1	Commercial	HP01	Sn-Pb
SY10EP01VZI	Z8-1	Industrial	HEP01	Sn-Pb
SY10EP01VZITR <sup>(2)</sup>	Z8-1	Industrial	HEP01	Sn-Pb
SY10EP01VKI <sup>(2)</sup>	K8-1	Industrial	HP01	Sn-Pb
SY10EP01VKITR <sup>(2)</sup>	K8-1	Industrial	HP01	Sn-Pb
SY10EP01VZG <sup>(3)</sup>	Z8-1	Industrial	HEP01 with Pb-Free bar-line indicator	NiPdAu Pb-Free
SY10EP01VZGTR <sup>(2, 3)</sup>	Z8-1	Industrial	HEP01 with Pb-Free bar-line indicator	NiPdAu Pb-Free
SY10EP01VKG <sup>(3)</sup>	K8-1	Industrial	HP01 with Pb-Free bar-line indicator	NiPdAu Pb-Free
SY10EP01VKGTR <sup>(2, 3)</sup>	K8-1	Industrial	HP01 with Pb-Free bar-line indicator	NiPdAu Pb-Free

**Notes:**

1. Contact factory for die availability. Dice are guaranteed at T<sub>A</sub> = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

**ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>**

Symbol	Rating	Value	Unit
$V_{CC}$	Power Supply Voltage ( $V_{EE} = 0$ )	-6.0 to 0	V
$V_{EE}$	Power Supply Voltage ( $V_{CC} = 0$ )	+6.0 to 0	V
$V_I$	Input Voltage ( $V_{CC} = 0V$ )	-6.0 to 0	V
	Input Voltage ( $V_{EE} = 0V$ )	+6.0 to 0	V
$I_{OUT}$	Output Current -Continuous -Surge	50 100	mA mA
$T_A$	Operating Temperature Range	-40 to +85	°C
$T_{LEAD}$	Lead Temperature (Soldering, 20sec.)	+260	°C
$T_{store}$	Storage Temperature Range	-65 to +150	°C

**Note 1.** Permanent device damage may occur if absolute maximum ratings are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>**

$V_{CC} = 0V$ ;  $V_{EE} = -5.5V$  to  $-3.0V$ ;  $V_{CC} = 3.0V$  to  $5.5V$ ,  $V_{EE} = 0V$ <sup>(2)</sup>

Symbol	Parameter	$T_A = -40^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
$I_{EE}$	Power Supply Current <sup>(3)</sup>	—	—	31	—	20	31	—	—	31	mA
$V_{OH}$	Output HIGH Voltage <sup>(4)</sup>	-1135	—	-0885	-1070	-0945	-0820	-1010	—	-0760	mV
$V_{OL}$	Output LOW Voltage <sup>(4)</sup>	-1935	—	-1685	-1870	-1745	-1630	-1810	—	-1560	mV
$V_{IH}$	Input HIGH Voltage	-1210	—	-0885	-1145	—	-0820	-1085	—	-0760	mV
$V_{IL}$	Input LOW Voltage	-1935	—	-1610	-1870	—	-1545	-1810	—	-1485	mV
$I_{IH}$	Input HIGH Current	—	—	150	—	—	150	—	—	150	μA
$I_{IL}$	Input LOW Current	0.5	—	—	0.5	—	—	0.5	—	—	μA

**Note 1.** 10EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and traverse airflow greater than 500lfpm is maintained.

**Note 2.** Input and output parameters vary 1:1 with  $V_{CC}$ .

**Note 3.**  $V_{CC} = 0V$ ,  $V_{EE} = V_{EE}(\min)$  to  $V_{EE}(\max)$ , all other pins floating.

**Note 4.** All loading with  $50\Omega$  to  $V_{CC} - 2.0V$ .

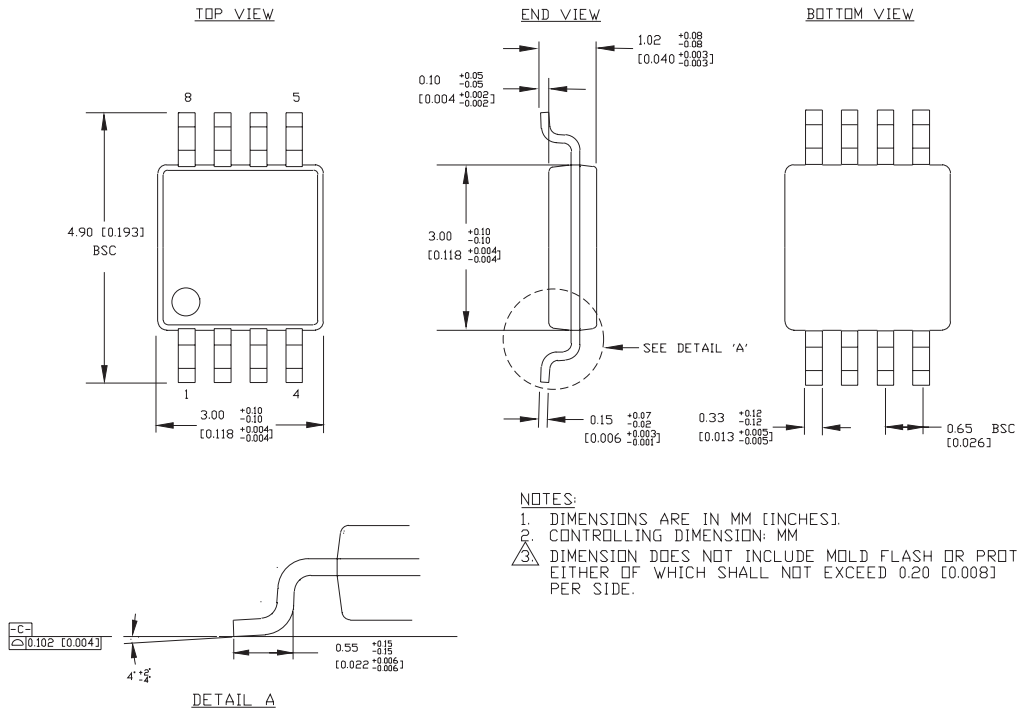
**AC ELECTRICAL CHARACTERISTICS**
 $V_{CC} = 0V$ ,  $V_{EE} = -3.0V$  to  $-5.5V$ ;  $V_{CC} = 3.0V$  to  $5.5V$ ,  $V_{EE} = 0V$ 

Symbol	Parameter	$T_A = -40^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
$f_{MAX}$	Maximum Toggle Frequency <sup>(1)</sup>	—	—	—	—	3	—	—	—	—	GHz
$t_{PD}$	Propagation Delay to Output Differential D → Q, /Q	100	—	300	150	200	250	200	—	300	ps
$t_{SKEW}$	Device Skew <sup>(2)</sup>	—	—	—	—	5	20	—	—	20	ps
$t_r$ $t_f$	Output Rise/Fall Times Q (20% to 80%)	60	—	180	60	110	180	70	—	180	ps

**Note 1.**  $f_{MAX}$  guaranteed for functionality only.  $V_{OL}$  and  $V_{OH}$  levels are guaranteed at DC only.

**Note 2.** Skew difference between all inputs to output. Parameter not tested.

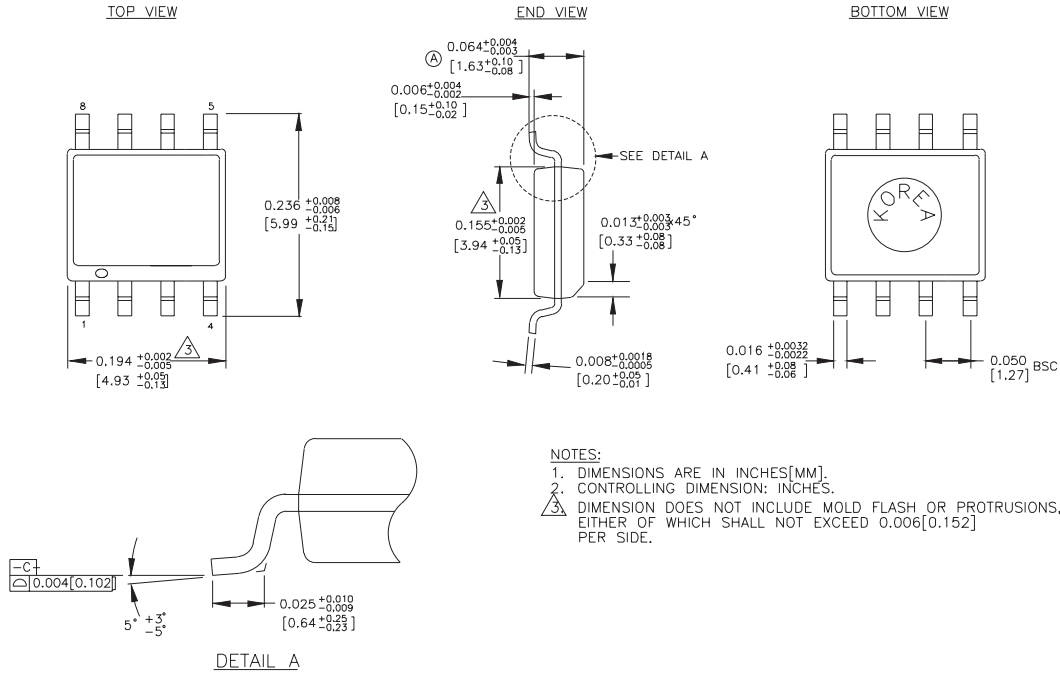
**8-PIN MSOP (K8-1)**



NOTES:  
 1. DIMENSIONS ARE IN MM [INCHES]  
 2. CONTROLLING DIMENSION: MM  
 3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.20 [0.008] PER SIDE.

Rev. 01

**8-PIN PLASTIC SOIC (Z8-1)**



Rev. 03

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